KHOLODNOV, N.

Simplifying the calculation of cost in sausage production. Mias.ind.SSSR 27 no.3:36-37 '56. (MLRA 9:9)

1.Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti. (Sausages) (Meat industry--Accounting)

KHOLODOV, I.

Organizational and technical plan is an importatnt part of the production plan. Miss.ind.SSSR 27 no.6:40-41 '56. (MLRA 10:2)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti.
(Meat industry)

GRUK, M.; KHOLODNOV, N.

Operational supervision of the fulfillment of scheduled production costs. Mias. ind. SSSR. 30 no.4:32-33 '59. (MIRA 12:12)

1.Leningradskiy myasokombinat (for Gruk). 2.Moskovskiy tekhnologicheskiy institut myasnoy promyshlennosti (for Kholodnov).
(Meat industry--Costs)

KHOLODNOV, N.

Establishing the production capacity of sausage shops. Mias. ind. SSSR 32 no.1:42-44 '61. (MIRA 14:7)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti.
(Sausages)

KHOLODNOV, N.

Need for a reorganization of the cattle price systems. Miss.ind. SSSR 33 no.2:33-36 '62. (MIRA 15:5)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti.

(Beef cattle--Prices)

YE V KHOLODNOV

"Development of the Design and Technology of Manufacture of Drawing Dies form Mica for the Purpose of Unifying Them" from Annotations of Works Completed in 1955 at the State Union Sci. Res. Inst; Min. of Radio Engineering Ind.

So: B-3,080,964

KHOLODNOV, Ye V

PHASE I BOOK EXPLOITATION SOV/5289

Akademiya nauk SSSR. Tsentral'naya nauchno-issledovatel'skaya laboratoriya elektricheskoy obrabotki materialov.

Elektroiskrovaya obrabotka metallov (Electric-Spark Machining of Metals) no. 2. Moscow, Izd-vo AN SSSR, 1960. 262 p. Errata slip inserted. (Series: Its: Trudy) 6,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR.

Resp. Ed.: B. R. Lazarenko; Ed. of Publishing House: S. M. Koyzhes; Tech. Ed.: A. P. Guseva.

PURPOSE: This collection of articles is intended for process engineers, and technical and research personnel engaged in the working of metals.

COVERAGE: Problems concerning the most effective application of electric-spark methods in industry are reviewed. Possible future developments in the field of electric-spark machining and its automation are discussed, and, for instances of its present utilization in industry, the technical-economic effectiveness of the process is examined, and the equipment involved is described. The relationship between the parameters of electric-spark pulses and the production characteristics (productivity, machining accuracy, and surface quality) of electric-spark machining is established. An electric-spark method is advanced for the curvilinear cutting of materials with a 20 to 30 micron-thick wire, thus directly producing a finished part. Non-Soviet developments in the field of electric-spark machining are also treated. No personalities are mentioned. There are 121 references: 82 Soviet, 20 English, 10 French, 8 German, and 1 Italian. These references accompany individual articles.

Card 4/5

34055
S/123/62/000/003/009/018
A004/A101

1.1110

AUTHOR: Kholodnov, Ye. V.

TITLE: Electrospark manufacture of precision tools

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 3, 1962, 35, abstract 3B178 ("Tr. Tsentr. n.-i. labor. elektr. obrabotki materialov. AN SSSR", 1960, no. 2, 156-178)

TEXT: The high accuracy (class 1 - 2) and surface finish ($\nabla 8$ - $\nabla 10$) and other specific requirements made to precision tools for electrovacuum production (dies for mica, punches for the manufacture of components of vacuum devices, etc.) render difficult the manufacture of such tools by mechanical processes. Electrospark machining not only ensures that these demands are fulfilled, but in a number of cases makes it possible to develop new technological tools. Precision machining by this method is attained by using pulses with an energy in the range of 10^{-2} to 10^{-4} joule. The author presents technological regularities of electrospark machining using an RC circuit in this energy range: the dependence of the erosion magnitude of the component on the conditions, machining area, electrode shape, its vibration amplitude, depth of hole, etc. and gives some

Card 1/3

Electrospark manufacture of precision tools

information on the dependence of the surface finish, magnitude of lateral clearance and hole conicity on the machining conditions. The mentioned dependences are of a nature similar to the regularities of electrospark machining under rougher conditions, which had been investigated earlier. The author presents a detailed analysis of the technology of producing holes and components of intricate shape. Electrodes for holes of intricate shape are made of copper by the extrusion method in special dies. The fixed electrode setting is ensured by a special jig. This technology is used in the manufacture of punches and dies for mica insulators on the ЭКУ-2 (EKU-2) coordinate electrospark installation, whose design and electric circuit diagram are given. For manufacturing components with intricate outer shape, a method of reversed copying, developed by the author, is being used. In this method, the shaping element during the machining is the inner electrode surface, the electrode being dismountable. The electrode is placed below, the component above. With such an arrangement the erosion products are removed without getting into the working zone, owing to which there is practically no conicity of the surface obtained. The improved evacuation conditions for the gases and metal particles from the working zone if the reversed copying method is used, leads to an improvement of technological machining indices. Preliminary investigations have shown the suitability of

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Electrospark manufacture of precision tools

using an h-f pulse oscillator for this method. There are 33 figures and 9 references.

S. Kruglova

[Abstracter's note: Complete translation]

Card 3/3

L 8445-66 EWT(m)/EWP(t)/EWP(k)/EWP(b) IJP(c) JD/JG

ACC NR: AP5025756 SOURCE CODE: UR/0286/65/000/018/0120/0121

33
B

AUTHOR: Kholodnov, Ye. V.

ORG: none

TITLE: Method for electric spark machining of small diameter precision holes. Class 49, No. 174934

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 18, 1965, 120-121

TOPIC TAGS: metal cutting, metal machining, spark machining, electric spark machining, metalworking, ELECTROSPARK MACHINING

ABSTRACT: This Author Certificate presents a method for electric spark machining of small diameter precision holes with a wire electrode made, for example, from tungsten. To increase the accuracy of the holes and to obtain a coaxial cone at the hole entrance, the electrode is plated, for example, by the galvanizing process, with a copper coating of varying density which decreases from the center toward the periphery. This process results in preliminary machining of the entrance cone at an operating regime which partially destroys the copper coating and which forms a cone on the end of the electrode corresponding to the desired entrance cone. After that the length of the electrode which corresponds to the cylindrical part of the desired opening is cleaned of all copper by etching. Final machining is then accomplished without disturbing the position of the work and the electrode. An alternate apporach provides

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L 8445-66

ACC NR: AP5025756

continuous machining until the center of the electrode has penetrated through the hole.

SUB CODE: 13/ SUBM DATE: 25Jul62

BVK
Card 2/2

L 23395-66 EWP(k)/EWT(m)/EWA(d)/EWP(t) IJP(c) JD/JG

ACC NR: AP6000636 SOURCE CODE: UR/0407/65/000/001/0037/0046

AUTHOR: Kholodnov, Ye. V. (Moscow)

ORG: none

TITLE: Precision electrospark machining of metals in carbonless medium

SOURCE: Elektronnaya obrabotka materialov, no. 1, 1965, 37-46

TOPIC TAGS: electrospark machining, metal machining

ABSTRACT: The results are reported of an experimental investigation of electrospark machining of metals in water (instead of kerosine) with the power derived from an RC generator. Singly distilled water with a resistivity of 2×10^{-5} per ohm per cm, a capacitor energy of 32—3600 microj., and copper, tungsten, 1Kh18N9T steel as test metals were used. It was found that: (1) The use of distilled water is not only feasible but also economical; as compared to the use of kerosine, the productivity of manufacturing electron-tube parts and tools is enhanced, labor required for subsequent parts cleaning is reduced, and working conditions are improved; (2) The interelectrode gap power is better utilized with the water; hence, the process

Card 1/2

L 23395-66
ACC NR: AP6000636

productivity increases by 2—3 times when an RC or thyratron generator is used; (3) The performance of an RC-generator-supplied outfit (higher than 7th class surface finish with a 0.1-mm or thinner electrode wire) is higher than that obtainable with a thyratron generator; (4) Adoption of water as an interelectrode medium requires a slight modification of kerosine-oriented equipment. Detailed laboratory data is tabulated. Orig. art. has: 4 figures and 6 tables.

SUB CODE: 13 / SUBM DATE: none / ORIG REF: 007

Card 2/2

KHOLODNOV, Yu.A.

Formation of conditioned response to a magnetic field in fishes. Trudy sov.Ikht.kom. no.8:82-89 '58. (MIRA 11:11)

1. Kafedra fiziologii vysshey nervnoy deyatel'nosti Moskovskogo gosudarstvennogo universiteta imeni M.V. Lomonosova.
(Conditioned response) (Magnetic fields) (Sense organs--Fishes)

DANILYUK, V.A.; ZHUKOV, V.N.; PANOV, G.I.; KUTSENKO, G.L.; LUGOVETS, V.A.; NEKHONOV, N.A.; PORTNYAGIN, A.I.; RECHKIN, L.A.; SEREGIN, V.P.; SIVTSOV, V.P.; KHOLODNOV, Yu.I.; MEL'NIKOV, V.V., kand.tekhn.nauk, red.; KOZULIN, B., red.; CHERNIKHOV, Ya., tekhn. red.

[Radio amateur's handbook]Spravochnik radioliubitelia. Sverdlovsk, Sverdlovskoe knizhnoe izd-vo, 1962. 838 p.
(MIRA 15:8)

(Radio--Handbooks, manuals, etc.)

PAL'MIN, V.V.; TETERNIK, D.M.; AVSYUKEVICH, V.S.; ASLANOV, V.G.; GOL'DMAN, Ye.I.; ZEL'MANOV, I.S.; STEFANOV, A.V.; KHOLODNOVA, O.S.

Studying the possibility of applying preslaughter adrenal treatment in the meat industry. Izv.vys.ucheb.zav.; pishch.tekh. no.1:66-71 '63. (MIRA 16:3)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti i Moskovskiy myasokombinat.
(Adrenalin) (Slaughtering and slaughterhouses)

MAKSIMIKHIN, Ivan Alekseyevich; KHOLODNYAK, Aleksey Ivanovich; MIKHAYLOV, P.Ye.; redaktor; [illegible], T.P., tekhnicheskiy redaktor.

[Model of the Red Banner Cruiser "Aurora"] Model' krasnoznamennogo kreisera "Avrora". Moskva, Izd-vo DOSAAF, 1956. 86 p. (MLRA 9:6)
(Ship models)

SANDAKHCHIYEV, I.S.; KHOLODNYAK, A. Yu.; ERMANOVA, A.V.

Experimental unit for modeling fluid flow through porous media.
Trudy Turk. fil. VNII Part C no.6:82-88 '63 (MIRA 17:7)

KHOLODNYI, S.D., inzh.

Oxydation of aluminum wires at high-current densities. Trudy MEI no.39:357-366 '62. (MIRA 17:6)

KULIKOV, A.I.; POLYAKOV, I.M.; KHOLODNYUK, M.S.; BOCHKAREVA, Z.A.

Disinfecting seeds with the addition of a sulfite liquor concentrate sticker. Zashch. rast. ot vred. i bol. 7 no.12: 26-27 D '62. (MIRA 16:7)

(Seeds—Disinfection) (Sulfite liquor)

KHOLODNYY, A.

Entrance hall is lowered into the ground. Nauka i zhizn' 29 no.2:11-12 F '62. (MIRA 15:3)

1. Glavnyy inzhener "Kiyevmetrostroya". (Kiev--Subways)

VISHNYAKOVA, R.N.; LYSUNKINA, D.S.; SYRKIN, Ya.M.; Prinimali uchastiye: KARATANOVA, G.N.; KHOLODNYY, A.G.

Plugging cement for extra-deep oil and gas wells. Trudy IUzhgiprotsementa no.4:108-126 '63. (MIRA 17:11)

KRYZHANOVSKAYA, I.A., kand.tekh.nauk; MIRAK'YAN, V.M., inzh.; SHOKOTOVA, B.G., inzh.; KHOLODNYY, A.G., inzh.

Hydration of clinker alkali minerals. TSement 31 no.5:10-11 S-O '65. (MIRA 18:10)

1. Vsesoyuznyy institut po proyektirovaniyu i nauchno-issledovatel'skim rabotam "Yuzhgiprotsement".

DANILOV, A. D.; KHOLODNYY, G. S. I.

"Data on the Power of the Energy Source in the Ionosphere."

abstract presented at the 13th Gen Assembly, IUGG, Berkeley, Calif, 19-31 Aug 63.

KHOLODNYY, I.

Light and shades. Grazhd. av. 22 no.10:18-19 O '65.
(MIRA 18:12)

1. Predsedatel' mestnogo komiteta professional'nogo soyuza Dushanbinskogo aeroporta.

L 32052-66 EWT(l)/EWT(m)/T/EWP(t)/ETI IJP(c) JD/JG/AT

ACC NR: AP6013342 SOURCE CODE: UR/0363/66/002/004/0636/0642

AUTHOR: Vekilov, Yu. Kh.; Mil'vidskiy, M.G.; Osvenskiy, V.B.; Stolyarov, O.G.; Kholodnyy, L.P.

ORG: Giredmet

TITLE: Effect of doping and illumination on the microhardness of semiconductor single crystals

SOURCE: AN SSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 4, 1966, 636-642

TOPIC TAGS: gallium arsenide, hardness, semiconductor single crystal

ABSTRACT: The microhardness of n- and p-type GaAs single crystals was studied as a function of the carrier concentration, illumination with white light, crystallographic orientation, and magnitude of the load on the indenter. It was shown that doping of GaAs with a donor or acceptor impurity causes a decrease in microhardness, as in the case of Si and Ge. It was established that both the concentration effect and the illumination effect in the semiconductor single crystals studied are surface effects and are observed to a depth of a few microns. The results are explained by the peculiar properties of the surface of semiconductors and are attributed to the presence in the transition layer of

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ACC NR: AP6013342

an electric field perpendicular to the surface. It was established that the length of the prongs of dislocation "rosettes" formed around the imprints increases when donor and acceptor admixtures are used in doping, this being in accord with the concentration effect of decrease in microhardness. Although the explanation of the observed effects is not always unambiguous (because of the complexity of the phenomena), the method of microhardness measurement may be used to study the surface properties of semiconductors. Orig. art. has: 6 figures and 1 table.

SUB CODE: 11, 20 / SUBM DATE: 27Jul65 / ORIG REF: 010 / OTH REF: 003

Card 2/2

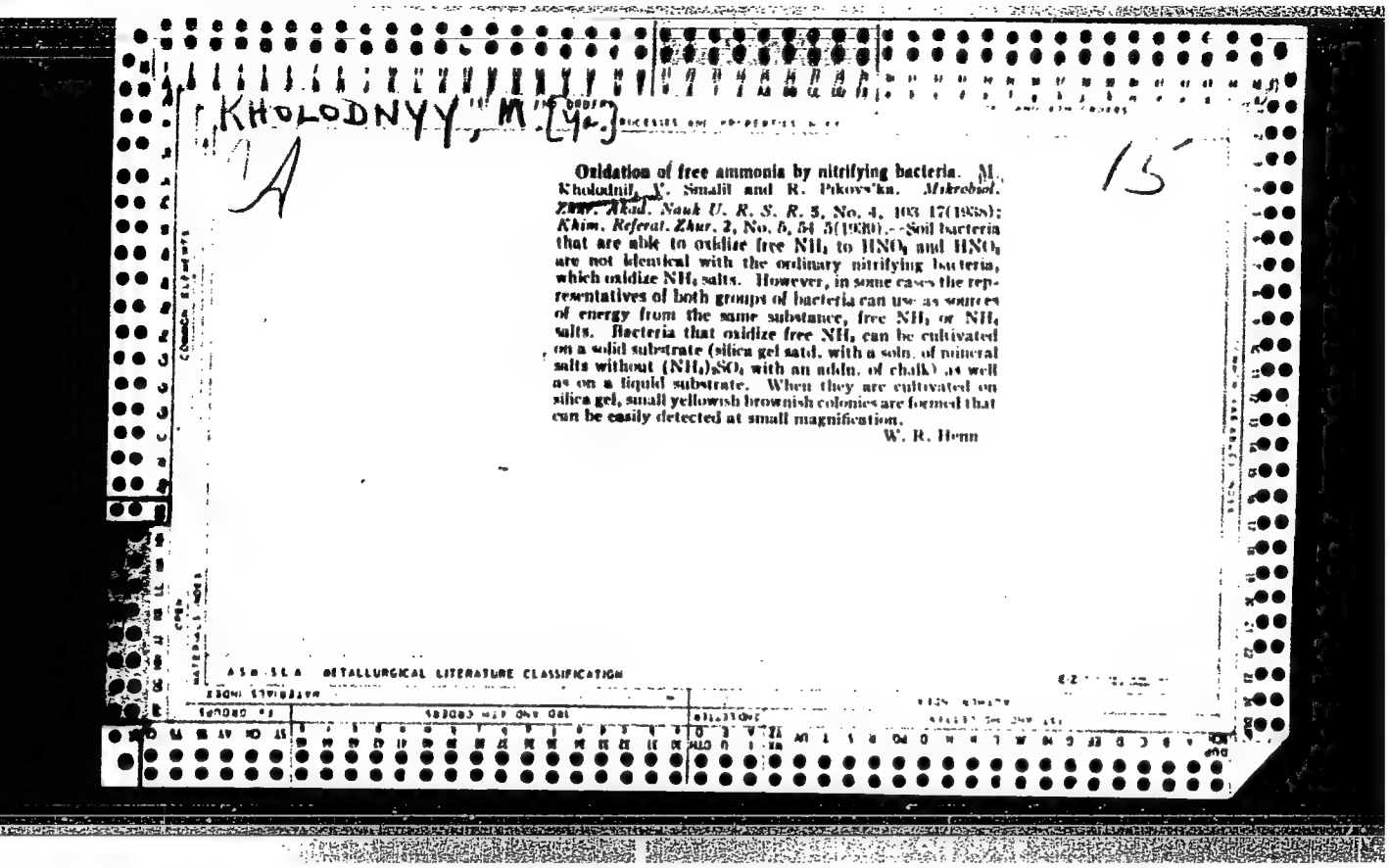
MINDLIN, S.S., kand.med.nauk; KHOLODNYY, M.D.

Effect of chemical preparations with antiblastic action on the cardiovascular system during the treatment of malignant neoplasms. Sov. med. 26 no.6:60-64 Je '62. (MIRA 15:11)

1. Iz Rostovskogo nauchno-issledovatel'skogo instituta rentgenologii, radiologii i onkologii (dir. P.N.Snegirev).
(CYTOTOXIC DRUGS) (CARDIOVASCULAR SYSTEM) (CANCER)

GLUSHKOV, L.A., inzh.; BELEN'KAYA, M.A., inzh.; KHOLODNYY, M.I.

Experimental system of gas removal, gas purification and ventilation in the area of a DSP-10 electric furnace. Lit. proizv. no.11:40-41 N '65. (MIRA 18:12)



KHOLODNYY, M. [illegible]

A

15

Oxidation of free ammonia by nitrifying bacteria. M. Kholodnil, V. Smalil and R. Pikovs'ka. *Mikrobiol. Zhur. Akad. Nauk U. R. S. R.* 5, No. 4, 103-17(1938); *Khim. Referat. Zhur.* 2, No. 6, 54-5(1939).—Soil bacteria that are able to oxidize free NH_3 to HNO_3 and HNO_2 are not identical with the ordinary nitrifying bacteria, which oxidize NH_3 salts. However, in some cases the representatives of both groups of bacteria can use as sources of energy from the same substance, free NH_3 or NH_4 salts. Bacteria that oxidize free NH_3 can be cultivated on a solid substrate (silica gel satd. with a soln. of mineral salts without $(NH_4)_2SO_4$ with an addn. of chalk) as well as on a liquid substrate. When they are cultivated on silica gel, small yellowish brownish colonies are formed that can be easily detected at small magnification.

W. R. Henn

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION

KHOLODNYY, M. YA.

Concerning S. I. Lebedev's article on phytohormones. Bot. zhur (Ukr.) 10 No. 1: 92-96 1953.

(MLRA 6:8)

Hormones (Plants) (Lebediev, S. I.)

KHOLODNYY, O.L. [Kholodnyi, O.L.]

Underground expresses tear along. Nauka i zhyttia 10 no. 11:19-22 N '60. (MIRA 14:4)

1. Glavnyy inzh. "Kyivmetrobudu".
(Kiev--Subways)

KHOLODNYY, S.D.

USSR/ Physics - Metallurgy

Card 1/1 Pub. 43 - 14/15

Authors : Frumkin, A. L., and Kholodnyy, S. D.

Title : Measurement of thermal dependence of the electrical resistance of Ni-Zn-ferrites

Periodical : Izv. AN SSSR. Ser. fiz. 18/3, 409-411, May-Jun 1954

Abstract : It was established that the electrical resistance of ferrites depends upon their composition, methods of calcination and cooling and upon the medium in which thermal treatment is carried out. The electrical resistance of Ni-Zn-ferrites is considered a very important characteristic since it determines the losses due to eddy currents. It was found that any reduction in the FeO amount leads to a reduction in ferrite resistance. Rapid cooling results in the formation of ferrites of low specific resistance and low activation energy; the activation energy and the electrical resistance may

Izv. AN SSSR. Ser. fiz. 18/3, 409-411, May-Jun 1954 (Additional Card)

Card 2/2

Abstract : decrease by one half in comparison with samples of the very same composition which were slowly chilled. The exponential nature of the relation between resistance and temperature at a wide range of temperatures is explained. Four references : 2 USSR; 1 French and 1 USA (1951 and 1952).

Institution : The V. M. Molotov Electrical Engineering Institute, Moscow

Submitted : May 16, 1954

SOV/112-57-5-10651

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1957, Nr 5, p 156 (USSR)

AUTHOR: Kholodnyy, S. D.

TITLE: Automatic Checking of Insulation of Enameled Wires (Avtomaticheskiy kontrol' izolyatsii emal'provodov)

PERIODICAL: Sb. statey nauch. stud. o-va Mosk. energ. in-ta, 1955, Nr 8, pp 223-235

ABSTRACT: Bibliographic entry.

Card 1/1

112-57-7-13954

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1957, Nr 7, p 17 (USSR)

AUTHOR: Frumkin, A. L., and Kholodnyy, S. D.

TITLE: On the Problem of Ferrite Permittivity in a Low-Frequency Band (K voprosu o dielektricheskoy pronitsayemosti ferritov v nizkochastotnoy oblasti)

PERIODICAL: Sb. statey nauch.-stud. o-va Mosk. energ. in-ta (Collection of articles of the Scientific Student Society, the Moscow Power-Engineering Institute), 1956, Nr 9, pp 142-147

ABSTRACT: A summary of fundamental results is presented of recently published experimental and theoretical works on the nature of the high (up to 10^6) ferrite permittivity in a low-frequency band. The high permittivity is explained by the presence in the material of relatively high conducting regions separated by the thinnest (of the order of 10^{-4} cm) interstices having high electric resistance. It is assumed that the origin of the interstices can be not only the porosity of the material or the presence of a second phase, but also defects in the crystal lattice at the points of contact between crystallites whose axes have different

Card 1/2

112-57-7-13954

On the Problem of Ferrite Permittivity in a Low-Frequency Band

orientations. Such defects result in an appearance of additional donor or acceptor levels and also in an increase in boundary-layer resistance, similar to the role of p-type interstices in n-type germanium. Bibliography: 14 items.

B.A.F.

Card 2/2

KHOLODNYY, S.D., inzh.

Aluminum wires with oxide insulation. Elektrichestvo no.3:63-66 Mr '62. (MIRA 15:2)

1. Moskovskiy energeticheskiy institut.
(Electric wire, Insulated)

S/196/63/000/002/014/026
E194/E155

AUTHOR: Kholodnyy, S.D.

TITLE: Oxidation of aluminium conductors at high current-density

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.2, 1963, 24-26, abstract 2 B 135. (Tr. Mosk. energ. in-ta, no.39, 1962, 357-366)

TEXT: A new technique for anodising aluminium conductors, to speed the manufacture of flexible insulated conductors, has been developed by the author in the Kafedra elektro-tekhnicheskikh materialov i kabeley (Department of Electrotechnical Materials and Cables) of MEI and the NII kabel'noy promyshlennosti (Scientific Research Institute of the Cable Industry). A non-sinusoidal alternating voltage was used whose positive half-wave (Al - anode) was greater than the negative (Al - cathode). Here in certain cases the current density of oxidation reaches 3 - 4 A/cm^2, which reduces the time required to produce an optimum thickness of oxide film by a factor of 20 - 30 as compared with oxidizing by alternating voltage, and by a factor of 50 - 100 as compared with

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oxidizing with d.c. It is shown that electro-chemical dissolution of oxides, and not chemical dissolution as was previously supposed, occurs at the bottom of the pores. The investigations suggest that ionic current is set up during the motion of vacant oxygen-free positions which are formed at the boundary between the metal and oxides. Here the current density and the field stress in the oxide can be related by the following equation:

$$j = A_o \cdot \exp - \frac{\varphi - bqE}{kT} \qquad (1)$$

where: j - current density, A/cm^2; φ - potential barrier for transition of the vacant place from one equilibrium position to the other, eV; b - activation distance from the equilibrium position to the maximum potential barrier φ, Å; q - charge of an oxygen ion, k; E - field intensity in the oxide, A/Å; k - Boltzman's constant; T - absolute temperature; A_o - a nearly constant coefficient which depends on the concentration of mobile ions in the oxide. Oxygen ions moving through vacant places reach the metal-oxide surface, to form new layers of oxide uniformly over

the entire surface, and electro-chemical dissolution of oxide occurs at the bottom of the pores. The rate of dissolution of oxide and the field stress can be connected by the following equation:

$$v_p = A_p \cdot \exp\left(-\frac{\varphi_p - a_p q_p E}{kT}\right) \qquad (2)$$

where: A_p - a coefficient depending upon the electrolyte anion concentration; φ_p - the potential barrier for transition of aluminium ions from oxide to electrolyte; a_p - distance from the stable position of the Al ion close to the oxide surface to the maximum potential barrier φ_p; q_p - the ion charge of Al; E - the field intensity on the oxide-electrolyte boundary. Using Eqs.(1) and (2) and allowing for the relationship between the field intensity and the dimensions of cells and pores of the oxide layer, an equation is obtained relating the current density and the relative volume of pores in the oxide layer:

$$\log j = \frac{\log A_p - \frac{\varphi_p}{kT} + \frac{\frac{a_p q_p}{bq\sqrt{\beta}}}{1 - \frac{a_p q_p}{bq\sqrt{\beta}}}}{1 - \frac{a_p q_p}{bq\sqrt{\beta}}} \times \left(\frac{\varphi}{kT} - 8.6 - \log A_o\right) - 8.6 \qquad (3)$$

where β is the relative volume of pores. In Eq.(3) values of A_p and φ_p were calculated from the relationship between the speed of dissolution of oxide and electrolyte temperature. The value of φ_p was 0.523 eV, and $A_p = 10^{7.07}$ Å/sec. The values of A_o, φ and bq were obtained by determining the volt-ampere characteristics of the barrier layer by the comparison method ($A_o = 10^{8.15}$ A/cm^2; φ = 1.04 eV; bq = 5.4 e.Å). Anodising under alternating voltage has a number of special features. Evolution of hydrogen in the half-cycle when Al is the cathode alters qualitatively the relationship between the current density and the

forming voltage. In experimental investigations of this relationship, separate measurements were made of the mean value of positive current density j_+ (Al - anode) and negative current density j_- (Al - cathode), since oxide growth occurs only during positive current. The currents were separated by means of two diodes. With direct current and a voltage of about 23 V there is a sharp increase in current and destruction of the film with the formation of cavities in the metal. However, with alternating voltage the process remains stable and the voltage can be increased to 60-80 V, beyond which intensive sparking occurs followed by arc formation which burns the conductors. With alternating voltage j_+ may reach 50-60 mA/cm^2, but does not exceed 25-30 mA/cm^2 with constant voltage. The value of the negative current was usually 2-3 times greater than the positive. With a constant positive voltage half-wave the positive current begins to increase sharply if the negative half-wave is reduced, and its density reaches 500 mA/cm^2 and more; however, if the negative voltage is too low the oxide film begins to be destroyed, as with direct current, when the anode voltage exceeds 23 V. The greatest current density is reached with a positive half-wave voltage of 35-40 V and a negative half-wave

voltage of 20-25 V. At lower voltages the current density diminishes and at higher there occurs intensive dissolution of the oxide by heating. Its temperature in a number of cases was found to reach 373 °K (100 °C). Reduction in the negative half-wave voltage was achieved by passing a positive current through a diode in the conducting direction and a negative current through a ballast impedance which shunted the anode. Under all conditions investigated, simultaneous determinations were made of the relative pore volume, by weighing the specimen before and after anodizing and also after dissolving the oxide in chromate-phosphate solution. It was thus possible to determine the value of $a_p q_p$ and to confirm that the theoretically-established relationship between the current density and β coincides satisfactorily with experimental data under widely different anodizing conditions. Measurement of barrier-layer thickness with alternating and non-sinusoidal voltage showed that this thickness is reduced as the current density is increased. The cause of the comparatively low current-density and high voltage with a.c. is the increase in the thickness of the barrier layer which is about 14 Å/V (eff). On reducing the negative voltage the relative thickness of the barrier diminishes

and the current increases, because of a higher field intensity in the barrier layer. The special features of the process of formation of a porous oxide film on aluminium with alternating and non-sinusoidal voltages are explained: during oxidation with alternating voltage, the hydrogen evolved in the negative half-cycle acts on the shape of the oxide cell, somewhat increasing the pore size. This lowers the rate of dissolution on the oxide-electrolyte boundary (by reducing the field intensity of this boundary), thickens the barrier layer, enlarges the oxide cells, and increases the voltage if the current density remains constant. The increase in pore size with increasing voltage and current density is also observed with constant voltage. With alternating voltage, however, the pore diameter increases much faster and, therefore, destruction of the film does not occur. If the negative half-cycle voltage is reduced, a smaller amount of hydrogen is evolved; and with stable cell shape the pore size diminishes, which leads to accelerated dissolution of the boundary layer. The current density then increases and may reach 0.5-1 A/cm^2. If a very small amount of hydrogen is evolved, the stability of the process is disturbed as with direct current. Passage of negative current also

causes some dissolution of the barrier layer. The "switch-on" transient with alternating voltage has a very high current density. After some seconds it falls, denoting a marked increase in thickness of barrier layer and formation of stable cell shape. At a voltage of 27-35 V this instant corresponds to a porous layer thickness of about 3 microns. Consequently, the full stabilizing effect of hydrogen is observed only if a porous layer exists. Further, as the layer thickens the current slowly diminishes. If ions of alkali metal are present in the electrolyte, dissolution of the barrier layer in the negative half-cycle is somewhat greater. This increases the duration of the transient condition; the marked reduction in current is then observed at a considerably greater thickness of porous oxide layer, which depends on the amount of Na_2SO_4 in the electrolyte. With a Na_2SO_4 content of 0.6-1% in a 10% solution of sulphuric acid the limiting thickness of porous layer during the transient condition is 10-12 microns. In the period when the film thickness has not reached this maximum value, the current density is very high and remains almost constant and also does not depend on the amount of Na_2SO_4 in the electrolyte.

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During the transient condition, the oxide film is of friable granular structure. Therefore, conductors produced under these conditions are very flexible but the film is of low mechanical strength. The combination of electrolyte with an addition of Na_2SO_4 and non-sinusoidal voltage makes it possible to obtain films of given properties whilst in some cases the anodizing current density reaches 4 A/cm^2 and the process time is reduced to 10-20 seconds to produce conductors of the best characteristics. In suitable installations circular conductors of 0.15-4 mm diameter and more may be anodized and also rectangular conductors of up to 30 mm^2 section and strips. The rate of drawing the conductor during anodizing is 2-6 m/min for conductors 3.0-2.0 mm diameter, and reaches 20 m/min for small diameter conductors. The breakdown voltage between anodized conductors twisted together is 250-450 V, depending on the conductor diameter; the flexibility of the conductors reaches 10 - 5 times the diameter and the mechanical strength on rubbing is comparable with wire enamel grade ПЭВ-1 (PEV-1) for round conductors and grade ПЭЛ (PEL) for small-section conductors. The electrical insulating properties of oxide insulation, the flexibility of the conductors and the ohmic

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E194/E155

resistance of the aluminium are not altered by "soaking" at 673-773 °K (400-500 °C). After "soaking" the oxide insulation can operate during vibration at accelerations up to 10 g. When the atmospheric pressure is reduced the breakdown voltage of oxidized conductors is reduced by about 25% (at a pressure of 70-100 mm Hg). At still lower pressures the breakdown voltage again increases, in line with Paschen's law. The resistance of oxide insulation at a temperature of 673-773 °K remains fairly high and is some tens of megohms.m. However, normal wetting reduces it to 0.5 megohms.m. Impregnation with silicone varnish protects the oxide from moisture and the resistance of impregnated insulation is some tens of megohms.m. at high humidity. After impregnation the breakdown strength of oxide insulation increases to an extent depending on the thickness of the additional varnish film. The improvement is maintained for a certain time at a temperature of 523-573 °K (250-300 °C), but at 673-773 °K (400-500 °C) the varnish film decomposes and the conductor properties revert. Good results may be obtained by wrapping the oxide-insulated conductor with fibre-glass, which at high temperature maintains its insulating and mechanical properties better on an oxide layer than on copper and

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Oxidation of aluminium conductors... S/196/63/000/002/014/026
E194/E155

aluminium; and even after it is destroyed by prolonged heat, the insulating properties of the oxide film remain. Anodized conductors are recommended for high-temperature applications, principally for coil windings with only a few volts between turns. In mass production the cost of anodized conductors should not exceed that of ordinary enamelled conductors.
2 figures. 8 references.

[Abstractor's note: Complete translation.]

Card 11/11

KHOLOINYY, S.D.

Heating and cooling of a buried cable. Elektrichestvo no.6: 35-40 Je'64 (MIRA 17:7)

1. Moskovskiy energeticheskiy institut.

GANITS, V.L., inzh.; GRYAZNOV, A.A., inzh.; KHOLODNYY, S.D., kand.tekhn.nauk

Manufacture, properties, and applications of oxidized aluminum wires. Elektrotekhnika 35 no.3:44-46 Mr '64. (MIRA 17:5)

PRIVEZENTSEV, V.A., doktor tekhn. nauk; SLAVIN, R.M., kand. tekhn. nauk; KHOLODNYY, S.D., kand. tekhn. nauk; BABAKHANOV, Yu.M., inzh.

Study of polychlorovinyl insulation of winding wires of water cooled electric motors. Elektrotekhnika 36 no.8: 4-9 Ag '64. (MIRA 17:9)

KORNIYENKO, A.M., inzhener; KHOLODNYY, S.I., inzhener.

Replacement of worn packing rings in the blading assembly of radial stages in Ljungström turbines. Elek.sta. 27 no.9:52-54 S '56. (MLRA 9:11)

(Steam turbines--Maintenance and repair)

S/133/63/000/001/008/011
A054/A126

AUTHORS: Chekmarev, A. P., Saf'yan, M. M., Kholodnyy, V. G., Soroko, L. N., Ksenzuk, F. A.

TITLE: Determination of the strip temperature during rolling on continuous thin strip mills

PERIODICAL: Stal', no. 1, 1963, 62 - 65

TEXT: A uniform structure of the strip with a grain size that ensures the required mechanical characteristics can only be obtained, if the end temperature of rolling is higher than Ar_3 and the temperature of coiling is below 680°C. To determine the factors affecting the strip temperature during rolling, extensive tests were carried out at the zavod "Zaporozhstal'" ("Zaporozhstal'" Plant) on the 1,680 mm mill, covering the slab temperature from the time the product was in the heating section of the furnace onward through its passing the roughing mill (beyond the IV stand of this group), before the V finishing stand and beyond the X stand, by means of photoelectric pyrometers and also with a portable radiation tube at various spots between the stands of the finishing

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Determination of the strip temperature...

group. The effects of the heat absorbed by the slab during heating, the cooling time, the cooling methods, the strip surface-to-volume ratio, the chemical composition of the steel, the strip thickness and the rolling rate on the strip temperature were studied. In the tests, stainless [1 X18H 9 T (1Kh18N9T)] and carbon [C T.3KП (St.3kp)] grades were rolled to sizes varying between 3 x 1,030 and 6 x 1,232 mm. The temperature changes on the finishing stands, the effect of the rolling rate on the X stand and of strip thickness on the end temperature are shown in 8 graphs. At equal temperatures, strip thicknesses and rolling conditions, the end temperature of rolling for stainless steel strips is about 50 - 60°C higher than for carbon steel strips of the same dimensions. Increasing the rolling rate on the X stand by 10 m/min raises the end temperature of rolling for carbon steels by 2 - 3°C and for stainless steels by 5 - 6°C. By reference to the test results on the finishing stands and known equations used in temperature calculations the following empirical formulae were drawn up:

$$t = 815 + \frac{228(h-2)}{(h-2) + 2.57} \quad (3) \quad \text{for carbon steels and}$$

$$t = 920 + \frac{71(h-3)}{(h-3) + 0.76} \quad (4) \quad \text{for stainless steels,}$$

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(where h = the thickness of the strip beyond the stand in question, in mm). The formulae can be used for rolling conditions similar to those on the 1,680 mm mill. The graphs show a satisfactory similarity of the test results and the data obtained by the above formulae. There are 3 sets of graphs and 2 tables.

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22575
S/133/61/000/001/007/016
A054/A033

18.5700

AUTHORS: Chekmarev, A.P., Member of the Academy of Sciences USSR; Saf'yan, M.M., Candidate of Technical Sciences; Meleshko, V.M., Candidate of Technical Sciences; Soroko, L.N., Engineer; Kholodnyy, V.P., Engineer

TITLE: Heating the Finishing Stand Rolls of Wide Strip Mills

PERIODICAL: Stal', 1961, No. 1, pp. 43 - 46

TEXT: The frequent breakdowns of rolls in continuous and semi-continuous strip mills are a sericus drawback for the increasing productivity of these machines. Breakdowns are mainly due to thermal stresses caused by the non-uniform heating of the rolls. Tests carried out to investigate this problem showed that the heat stresses depend largely on the degree of reduction, the temperature and the length of the strip and the speed of rolling. The thin surface layer of the rolls suddenly becomes heated to up to 102°C, when the strip enters and suddenly cools down when the strip leaves the roll. To eliminate the thermal stresses due to sudden temperature changes, the rate of rolling on the finishing stand in the Zavod Zaporozhstal' (Zaporozhstal' Plant) in the beginning of the working period

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Heating the Finishing Stand Rolls of Wide Strip Mills

is decreased, e.g., the 1,680 mm stand of this plant produces 200 tons in the first hour after the rolls have been changed instead of 400 tons. In order to prevent heat stresses in the rolls and thus to eliminate production losses, the present article suggests the rolls to be preheated before operation to the temperature which corresponds to the normal rolling temperature on the particular stand. For this purpose an inductor has been designed, composed of three coiled cores, two of which are mounted under the roll, the third above it. The inductor is a-c fed (50 cps, 380 v). The rolls, the ball bearings and supports are connected with this device. In the working rolls of the finishing stand holes were drilled in which thermocouples (three pairs per roll) were fitted. The test results are plotted in Figures 4, 5, 6 and 7, and it was established that six pairs of the continuous finishing stand rolls could be preheated effectively, according to the following scheme. Four h before they are mounted on the stand the rolls of stands VIII - IX, then the rolls of stand VI and VII and finally those of stand V and X should be preheated by the inductor described. The heated rolls have to be wrapped in flannel and stored on shelves, so that the temperature will be distributed in them evenly, before they are mounted on the stand. The time available is 3 h for the rolls of stand VIII - IX, 2 h for those of stand VI - VII and 1 h for the rolls of stand V. The rolls of stand X, whose working tem-

Heating the Finishing Stand Rolls of Wide Strip Mills

perature is lower than that of the others, are heated only for 25 min and they are rolled over every 12 min. The temperature equalization takes 1.5 h in these rolls. By using a device for rotating the rolls slowly in the inductor, heating can be made more uniform. With preheated rolls mounted on the stand no special "heating up" period for the finishing stand process was necessary and the stands could operate at full capacity after the preheated rolls were mounted. There are 7 figures and 5 references: 1 Soviet and 4 non-Soviet .

ASSOCIATIONS: Institut chernoy metallurgii AN UkrSSR (Institute of Ferrous Metallurgy of the Academy of Sciences UkrSSR); Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute); zavod "Zaporozhstal'" ("Zaporozhstal' Plant)

Card 3/8 3

CHEKMAREV, A. P., akademik; MELESHKO, V. I., kand. tekhn. nauk;
SAF'YAN, M. M., kand. tekhn. nauk; KHOLODNYY, V. P., inzh.

Temperature conditions of roughing rolls on continuous thin-sheet mills. Nauch. trudy DMI no.48:121-131 '62. (MIRA 15:10)

1. Akademiya nauk Ukrainskoy SSR (for Chekmarev).

(Rolls(Iron mills)) (Thermal stresses)

SAF'YAN, M. M., kand. tekhn. nauk; KHOLODNYY, V. P., inzh.

Experimental deflection determination of the rolls on four-high rolling mills. Nauch. trudy DMI no.48:216-227 '62. (MIRA 15:10)

(Rolls(Iron mills)—Testing)

SAF'YAN, M. M., kand. tekhn. nauk; KHOLODNYY, V. P.;, inzh.

Experimental determination of the torque arm during the cold rolling of alloyed steels. Nauch. trudy DMI no.48:228-238 '62.
(MIRA 15:10)

(Rolling(Metalwork)) (Torque)

CHEKMAREV, A.P., akademik; SAF'YAN, M.M., inzh.; KHOLODNYY, V.P., inzh.; SOROKO, L.N., inzh.

Investigating the wear of working and backing rolls on continuous hot rolling sheet mill. Met. i gornorud. prom. no.5:23-28 S-O '63. (MIRA 16:11)

1. Dnepropetrovskiy metallurgicheskiy institut (for Chekmarev, Saf'yan, Kholodnyy). 2. Zavod "Zaporozhstal'" (for Soroko). 3. AN UkrSSR (for Chekmarev).

CHEKMAREV, A. P.; SAF'YAN, M. M.; KHOLODNYY, V. P.

Shear drag in rolling strips with irregular reduction. Izv. vys.ucheb.zav.; chern.met.7 no. 4:77-82 '64. (MIRA 17:5)

1. Dnepropetrovskiy metallurgicheskiy institut.

L 19840-65 EWT(m)/EWA(d)/EWP(t)/EWP(k)/EWP(b) Pf-4 MJW/JD/HW

ACCESSION NR: AP4049064 S/0148/64/000/011/0112/0119

AUTHOR: Chekmarev, A. P.; Saf'yan, M. M.; Kholodny*y V. P.; Ksenzyuk, F. A.

TITLE: Variations in longitudinal thickness during hot rolling of metal strips on continuous sheet mills

SOURCE: IVUZ. Chernaya metallurgiya, no. 11, 1964, 112-119

TOPIC TAGS: hot rolling, continuous sheet mill, longitudinal thickness, metal strip rolling

ABSTRACT: Variations in longitudinal thickness of hot-milled strips are due either to variation in temperature along the strip or to variation in pressure between the stands caused by roller wobbling, the ends of the strips being thicker than the middle. Experiments on the thickness of strips were performed on a continuous sheet mill at the Zaporozhstal' factory, with an oscillograph placed on the tenth stand set to show the change in thickness of the strip. Oscillograms showed that in every case the ends were thicker than the centers, and the trailing edge was thicker than the leading edge. 1Kh18N9T steel showed a greater variation in thickness than carbon steels. The difference in temperature from the front to the rear can be reduced by a reduction in size of the strip of metal. Experiments

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L 19340-65

ACCESSION NR: AP4049064

showed that increasing the rate of revolution of the tenth stand rollers by 15% and correspondingly increasing the rate of feed reduced the thickness by 11% and the area by 17.5%. In general, experiments confirmed theoretical predictions within reasonable limits. Orig. art. has: 3 graphs, 3 tables, and 6 formulas.

ASSOCIATION: Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute)

SUBMITTED: 07Jul62 ENCL: 00 SUB CODE: MM

NO REF SOV: 006 OTHER: 001

Card 2/2

CHEKMAREV, A.P.; SAF'YAN, M.M.; KHOLODNYY, V.P.; SUKHOBRUS, Ye.P.

Study of nonuniform deformation in rolling slabs on a continuous sheet mill. Stal' 25 no.4:334-335 Ap '65. (MIRA 18:11)

1. Dnepropetrovskiy metallurgicheskiy institut.

ACC NR: AT6012089 (N) SOURCE CODE: UR/3177/65/021/000/0038/0052

AUTHOR: Chekmarev, A. P. (Academician AN UkrSSR); Saf'yan, M. M. (Professor); Meleshko, V. I. (Candidate of technical sciences); Prokof'yev, V. I. (Candidate of technical sciences); Avramenko, I. N. (Engineer); Dodoka, V. G. (Engineer); Ksenzuk, F. A. (Engineer); Kudin, D. P. (Engineer); Lola, V. N. (Engineer); Movshovich, V. S. (Engineer); Pavlishchev, V. B. (Engineer); Soroko, L. N. (Engineer); Sukhobrus, Ye. P. (Engineer); Kholodnyy, V. P. (Engineer); Yudin, M. I. (Engineer)

ORG: none

TITLE: Improvements in the techniques of production of Kh18N10T cold-rolled wide-strip steel at the Zaporozhstal' Plant

SOURCE: Dnepropetrovsk. Institut chernoy metallurgii. Trudy, v. 21, 1965. Prokatnoye proizvodstvo (Welding production), 38-52

TOPIC TAGS: stainless steel, bright stock lubricant, metal rolling, sheet metal, industrial plant / Kh18N10T stainless steel, P-28 bright stock lubricant

ABSTRACT: On increasing to 11.8 tons from the previous 10.3 tons the weight of the ingots

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of Kh18N10T stainless steel used to produce 1000 mm wide sheets, the Zaporozhstal' Plant found it possible to reduce by 40-50 kg/mm^2 the wastage of metal during slabbing. Other innovations introduced in recent years at this plant include: fettling, flame scarfing and planing of ingot surfaces so as to eliminate defects of metallurgical origin prior to slabbing. These measures, along with improvements in the ingot reheating regime, have made it possible to increase the productivity of slabbing mills by 15-20%. The ingots themselves are cone-shaped in order to optimize the conditions of crystallization of the molten metal. After trimming and heating to 1050-1300°C the slabs proceed to a continuous strip mill where they are rolled into 1000 mm wide strip. By introducing the cold rolling of this strip in a reversible four-high mill with a reduction of 85% and by abandoning the practice of intermediate quenching during the production of 0.8-1.4 mm thick sheets rolled from 3.0 mm thick stock, using P-28 bright stock (highly viscous mineral oil) as the lubricant, using highly polished rolls, and increasing the convexity of the rolls to offset the increase in roll pressure, and thus streamlining the rolling techniques to an extent at which it became possible to roll in 13 passes 0.8 mm thick strip without overloading the rolls and main drive, the Zaporozhstal' Plant has found it possible to increase by 81% the productivity of its sheet mill and by 180%, the productivity of its reversible cold-rolling mill. The annual savings produced by these innovations amount to: for the slabbing-mill shop, 162,000 rubles; for the sheet-mill shop, 91,000 rubles; for the cold rolling shop, 719,000 rubles. Orig. art. has: 3 figures, 9 tables.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 015

KHOLODNYY, Ye., starshiy inzh.

Every second counts. Obshchestv. pit. no.11:39-40 N '61.
(MIRA 15:2)

1. Laboratoriya organizatsii proizvodstva i truda Severskogo metallurgicheskogo zavoda, g. Polevskoy Sverdlovskoy obl.
(Polevskoy—Restaurants, lunchrooms, etc.)

KHOLODNYY, Ye.

Mastering innovators' practice in the working area. Sots.trud 8 no.3:118-123 Mr '63. (MIRA 16:3)

1. Starshiy inzhener laboratorii organizatsii proizvodstva i truda Severskogo metallurgicheskogo zavoda.
(Steel industry--Technological innovations)

KACHANOVA, Ye.Ye., GOMBACHEVA, M.A., PETROCHENKO, N.A., KHOLODOK, A.N.

Hygienic evaluation of storage conditions and quality of breast milk at a donor center [with summary in English]. Pediatriia 36 no.10:14-20 O '58 (MIRA 11:11)

1. Iz sanitarno-epidemiologicheskoy stantsii Dzerzhinskogo rayona Leningrada.

(MILK, HUMAN,
donor centers, determ. of milk quality & hyg. evaluation of storage cond. (Rus))

KHOLODOK, V.D., red.; KUZNETSOVA, O.L., tekhn. red.

[The Leningrad environs; a tourist's guide] Okrestnosti Leningrada; turistskaia skhema. Moskva, 1963. 17 p. (MIRA 16:9)

1. Russia (1923- U.S.S.R.) Glavnoye upravlenie geodezii i kartografii.
(Leningrad region--Guidebooks)

KHOLODOK, Ye.D.; NIKIFOROV, I.V.; MAYSURADZE, L.I.; ALEKSANDROV, N.I.; BALASHOV, V.I.

New methods for gravity surveying under the conditions of a dense forest. Sbor.luch.rats.predl. pt. 2:4-5 '63. (MIRA 17:5)

1. Ukhtinskoye geologicheskoye upravleniye.

KOLYASEV, F.Ye.; ZHUCHENKOV, K.K.; KHOLODOV, A.G.

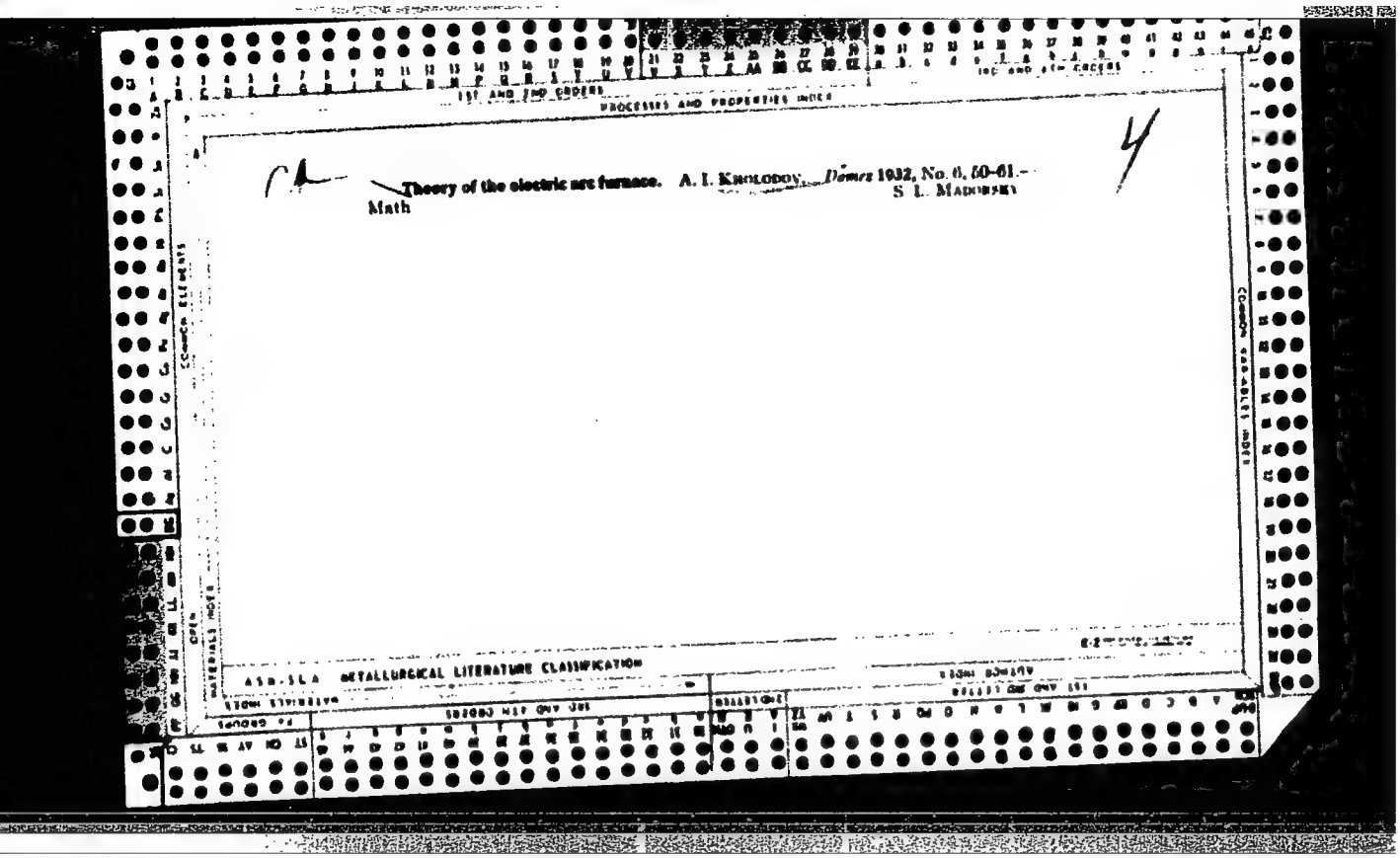
Extensive testing of a device for measuring soil moisture under field conditions. Sbor.trud.po agron. fiz. no.5:34-47 '52. (MIRA 11:7)

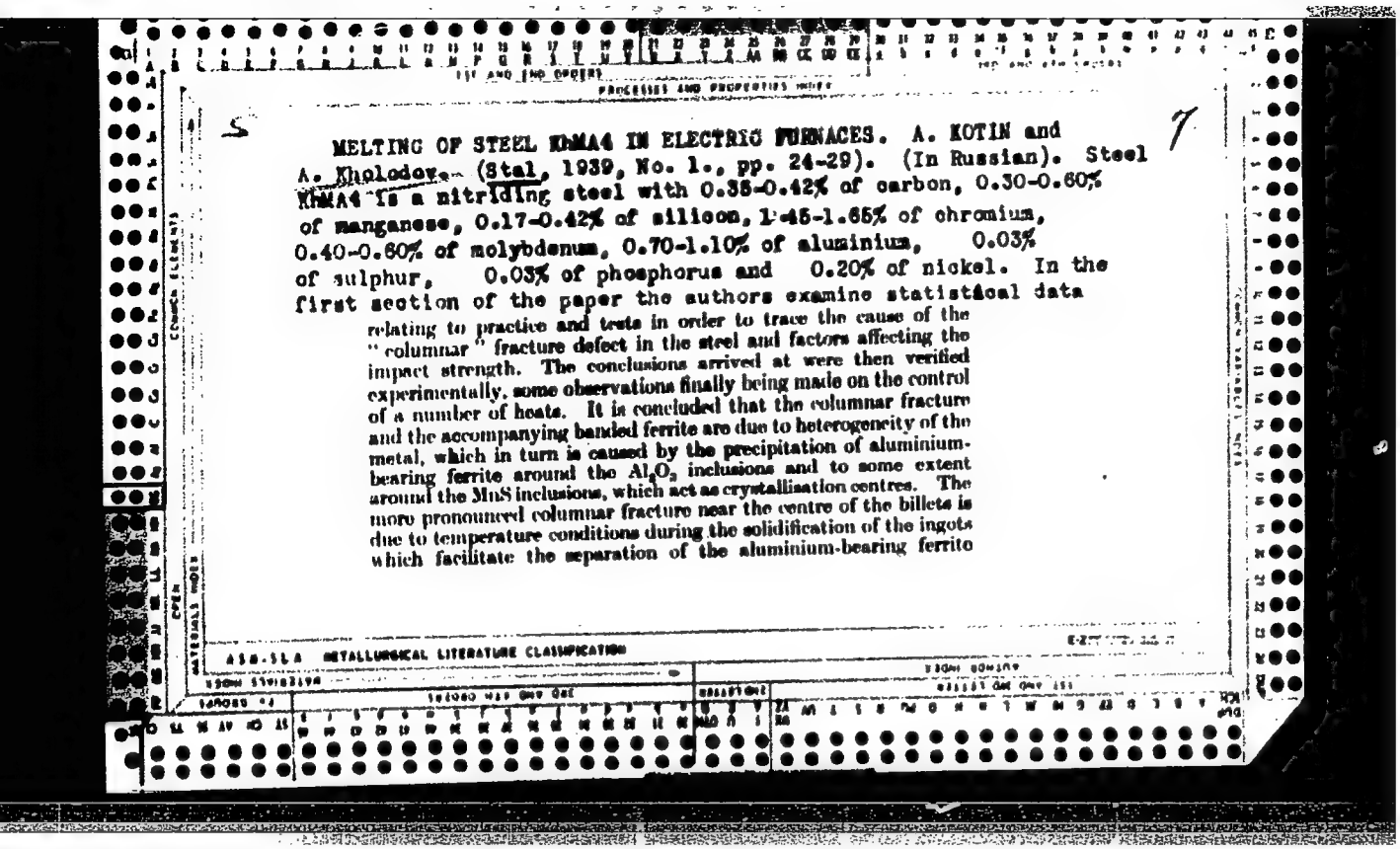
(Soil moisture-Measurement)

KHOLODOV, A. G.

KHOLODOV, A. G. -- "Hydrophobization of Soils. Hydrophobic Soil, Some of Its Properties and Uses." All-Union Order of Lenin Academy of Agricultural Sciences imeni V. I. Lenin. Agrophysics Sci Res Inst. Leningrad, 1955. (Dissertation for the Degree of Candidate of Agricultural Sciences.)

SO: Knizhnaya letopis' , No. 4, Moscow, 1956





PROCESSES AND PROPERTIES INDEX

5

MELTING OF STEEL KhMA4 IN ELECTRIC FURNACES. A. KOTIN and A. Kholodov. (Stal, 1939, No. 1., pp. 24-29). (In Russian). Steel KhMA4 is a nitriding steel with 0.38-0.42% of carbon, 0.30-0.60% of manganese, 0.17-0.42% of silicon, 1.45-1.65% of chromium, 0.40-0.60% of molybdenum, 0.70-1.10% of aluminium, 0.03% of sulphur, 0.03% of phosphorus and 0.20% of nickel. In the first section of the paper the authors examine statistical data relating to practice and tests in order to trace the cause of the "columnar" fracture defect in the steel and factors affecting the impact strength. The conclusions arrived at were then verified experimentally, some observations finally being made on the control of a number of heats. It is concluded that the columnar fracture and the accompanying banded ferrite are due to heterogeneity of the metal, which in turn is caused by the precipitation of aluminium-bearing ferrite around the Al_2O_3 inclusions and to some extent around the MnS inclusions, which act as crystallisation centres. The more pronounced columnar fracture near the centre of the billets is due to temperature conditions during the solidification of the ingots which facilitate the separation of the aluminium-bearing ferrite

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and also favour a certain segregation of the Al_2O_3. A columnar fracture and an increased number of non-metallic inclusions increase the impact strength in test-pieces taken in the longitudinal direction. Sound fracture and good solution of the aluminium are obtained by acid melting. The steel should be thoroughly deoxidised before adding the aluminium during the tapping of the furnace.

CA

Silicon monoxide in the melting of acid steel. P. V. Gel'd, A. I. Khaledov, and N. N. Bulanov (S. M. Kirov Ural Polytech. Inst., Ural Branch, Acad. Sci., U.S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 70, 679–82(1950).—Expts. were made on 4-ton heats of C steel in an acid elec. arc furnace to det. whether SiO is produced during the reducing period. In the course of this period the lining was attacked and the SiO_2 content of the slag increased from 63 to 82%. Dark blue sublimate flakes flew from the furnace. They had a sp. gr. of 0.02 to 0.05, were elastic in compression, and contained: SiO_2 70.16, CaO 2.09, MgO 0.77, Fe_2O_3 41.07, MnO 3.24, S 0.18%; Al_2O_3 was not detected. The presence of SiO accounts for a total analysis of more than 100% for this material and for the slag. Glowing of sublimate particles on the floor was attributed to the oxidation of SiO. By light and electron-microscope examn. it was detd. that the sublimate was composed of brownish spheres less than 1 μ in diam. with n 1.485. The material was identified as crystobalite. The sphere size decreased as deoxidation continued and the reducing agent was used up. In view of the similarity to melting of high-Si alloys, it was concluded that SiO is an intermediate product and probably is present in the slag and metal as well as in the gas phase. A. G. G.

KHOLODOV, A. I.

USSR/Metallurgy - Chemical technology

Card 1/1 Pub. 22 - 31/47

Authors : Kholodov, A. I.; Suchil'nikov, S. I.; and Malkin, I. P.

Title : The wetting ability of electric smelting slags

Periodical : Dok. AN SSSR 101/6, 1093 - 1096, Apr. 21, 1955

Abstract : Experiments were carried out with three synthetic and four factory type slags obtained from an electric arc smelter to determine their wetting ability. Results showed that the extreme angle of wetting of cast iron with factory and synthetic slags at a temperature of 1350-1630° varies between 77-26°. It was found that any increase in temperature was followed by a corresponding increase in the wetting ability of the slag. The effect of calcium carbide contents in the slag on its wetting ability is explained. Nine USSR references (1945-1954). Table; graphs; drawing.

Institution : The S. M. Kirov Ural Polytechnic Inst.

Presented by: Academician I. P. Bardin, November 22, 1954

DOKSHITSKAYA, Aleksandra Iosifovna; GORLACH, Ivan Artemovich; KHOLODOV, A.I., kandidat tekhnicheskikh nauk, retsenzent; VOLPYANSKIY, L.M., redaktor; DUGINA, N.A., tekhnicheskikh redaktor

[Electric furnace smelting of steel for founding shapes] Vyplavka stali dlia fasonnogo lit'ia v elektropechakh. Pod red. L.M. Volpianskogo. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1956. 58 p. (Nauchno-populiarnaia biblioteka rabochego-liteishchika, no.12) (MLRA 10:6)
(Smelting) (Electric furnaces)

KHOLODOV, A. I.

137-58-5-9141

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 56 (USSR)

AUTHOR: Kholodov, A. I.

TITLE: Criteria for a Rational Utilization of Steelsmelting Arc Furnaces Employed in Steelcasting Shops (Osnovy ratsional'noy ekspluatatsii dugovykh elektrostaleplavil'nykh pechey v staleliteynykh tsekhakh)

PERIODICAL: V sb.: Materialy konferentsii-kursov po elektroprivodu i avtomatiz. tekhnol. protsessov metallurg. predpriyatiy. Sverdlovsk, Metallurgizdat, 1957, pp 83-97

ABSTRACT: It is suggested that the hearth of an arc furnace be made in a circular shape and that it be calculated in accordance with the chosen specific free-surface area of the bath of molten metal ($f = 0.25\text{-}0.60\ m^2/t$: $D_{M.B.} \approx 1.13\ f^{1/2} \cdot G^{1/2} m$, where $D_{M.B.}$ is the diameter of the free surface of the pool of molten metal and G is the charge. The depth of the metallic bath is found from the equation: $h^3_{M.B.} + 0.75D^2_{M.B.} \cdot h_{M.B.} - 0.21D^2_{M.B.}/f = 0$. The height, taken from the center of the crown to the surface of slag (H_{cc}), must equal 0.52-0.55 D (D = diameter at the base of the walls).

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137-58-5-9141

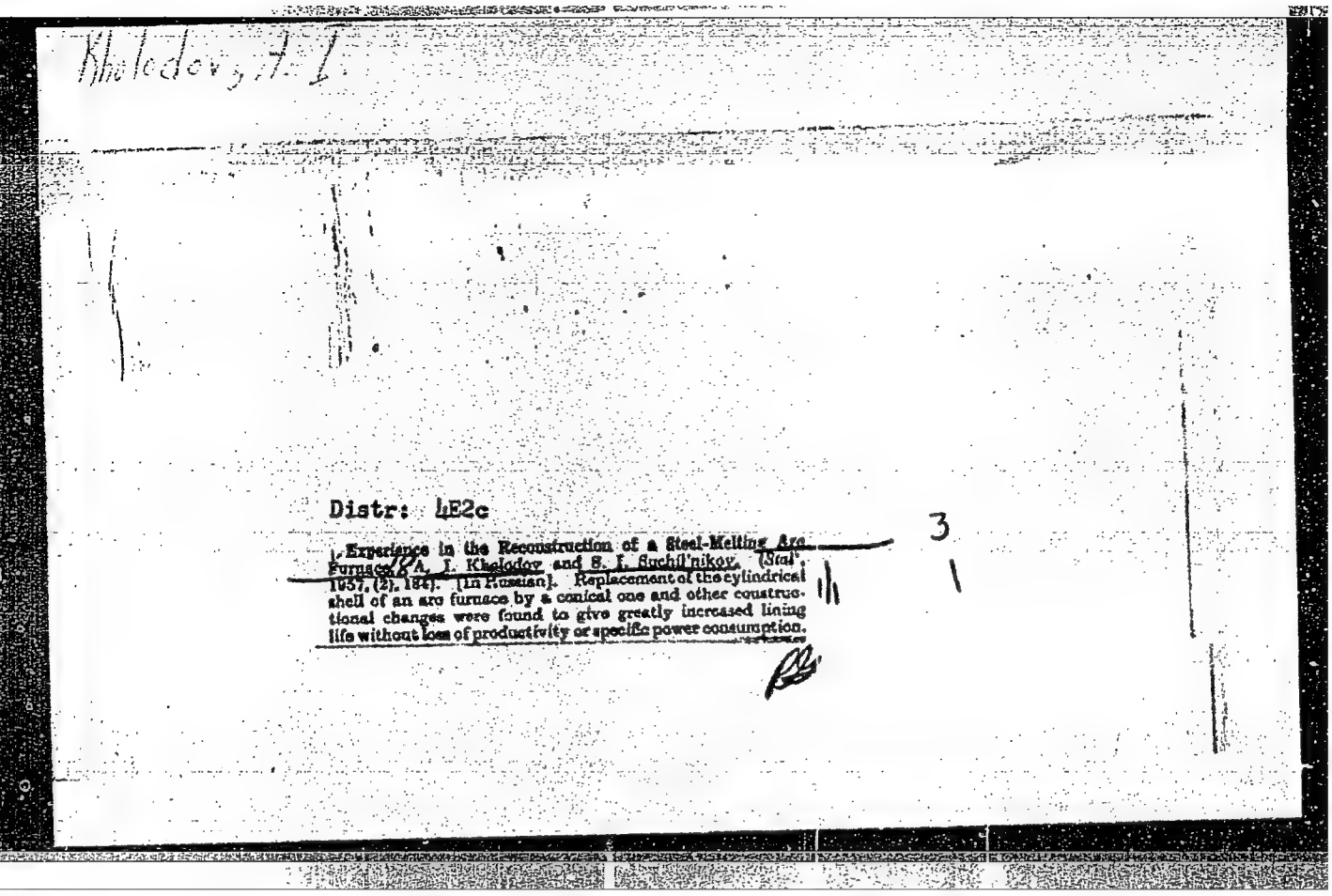
Criteria for a Rational (cont.)

It is suggested that the walls be made with an inclination of 13° and (regardless of the size of the furnace) be covered with a 100 mm thick layer of the following heat insulating materials: 20 mm of asbestos, 15 mm of filling, and 65 mm of fireclay lining.

V. T.

1. Electric furnaces--Design

Card 2/2



Khelodov, A. I.

Distr: 4E2c

Experience in the Reconstruction of a Steel-Melting Arc Furnace, A. I. Khelodov and S. I. Suchil'nikov. [Stal', 1957, (2), 184]. [In Russian]. Replacement of the cylindrical shell of an arc furnace by a conical one and other constructional changes were found to give greatly increased lining life without loss of productivity or specific power consumption.

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SOV/137-58-9-18659

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 71 (USSR)

AUTHORS: Yesin, O.A., Kholodov, A.I., Gel'd, P.V., Popel', S.I.

TITLE: Electrochemical Refining and Alloying of Ferrous Metals (Elektrokhimicheskoye rafinirovaniye i legirovaniye chernykh metallov)

PERIODICAL: V sb.: Staleplavil'n. proiz-vo, Moscow, Metallurgizdat, 1958, pp 151-161

ABSTRACT: A description is offered of the results of experiments in 1948-1952 in the electrochemical refining and alloying of metals. The laboratory experiments were run in a resistance furnace with a Silit electrode and in a 50-kg high-frequency furnace. Electrochemical refining of metal proved feasible. The application of an external electrical field to a metal-slag system makes it possible to regulate the speed and completeness of transfer of S from the metal into the slag. Pilot-plant experiments at the Verkh-Isetsk Plant employed a D-C generator (1000 amps, 120 v). The metal was poured into a 300-kg ladle. The results of the industrial experiments showed that when an external electrical field was applied the removal of

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Electrochemical Refining and Alloying of Ferrous Metals

sulfur from the steel proceeds with considerably greater efficiency than without electrolysis. Depending upon the initial composition of the metal and the slag and upon the quantity thereof, the S content diminished by 0.020-0.045% during the first 10 min. Simultaneously with the removal of S from the metal, an increase in Si content was observed. Current efficiency was from 20 to 96%. The experiments demonstrated the desirability of further development of the method and of its introduction into industrial practice.

L.K.

1. Ores--Processing 2. Metals--Production 3. Iron alloys--Production
4. Metals--Electrochemistry

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Sov/133/58-9-10/29

AUTHORS: Siunov, N. S. (Dr.Tech.Science, Professor), Rezin, M. G. (Candidate Tech.Science), Kholodov, A. I. (Candidate Tech. Sciences, Docent), , Osykhovskiy, I. G. (Candidate Tech.Science, Senior Lecturer)

TITLE: The Choice of Some Parameters of the Electro-Magnetic Stirrer for an Arc Furnace (Vybor nekotorykh parametrov dugovogo statora elektromagnitnogo peremeshivatelya zhidkoy stali)

PERIODICAL: Stal', 1958, Nr 9, pp 802-806 (USSR)

ABSTRACT: After a brief outline of the principle of operation of an electro-magnetic stirrer and advantages in its use (based on Western literature) the authors consider the problem of choice of some of its main parameters for a given velocity of movement of metal on the bottom of a furnace. The following parameters are considered: number of poles of the stator arc, length of Statov's arc, air gap arc, frequency of the current, length of the core. Theoretical considerations were tested on a model using mercury at room temperature (Fig.5). Good agreement between the calculated and actual velocities of the movement of the metal was obtained. Two designs of electro-magnetic stirrers developed by the

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The Choice of Some Parameters of the Electro-Magnetic Stirrer for an Arc Furnace

electrotechnical and electrometallurgical department of the Urals Polytechnical Institute in cooperation with the works UAZ, UZTM and VIZ will be soon introduced into the industry. There are 5 figures.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Urals Polytechnical Institute)

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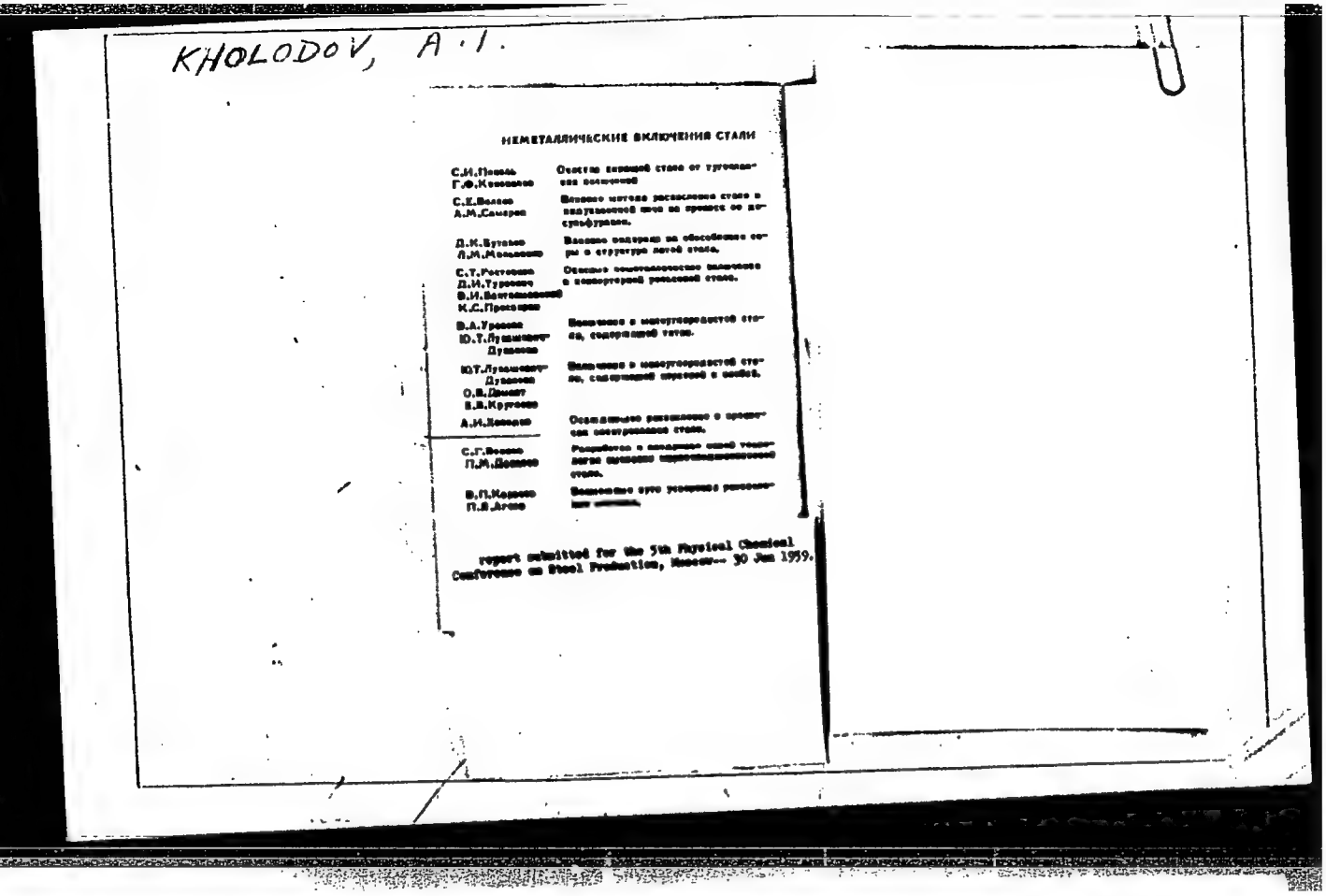

KHOLODOV, A.I.

НЕМЕТАЛЛИЧЕСКИЕ ВКЛЮЧЕНИЯ СТАЛИ

С.И.Попова Г.Ф.Комиссаров	Очистка хромовой стали от туго-плавких включений
С.Е.Волков А.М.Самарин	Влияние методов раскисления стали и вакуумирования жидкого металла на процесс ее десульфурации.
Д.К.Бутовин Л.М.Мовчанюк	Влияние окислов на обособление серы в структуре литой стали.
С.Т.Ростовцев Д.И.Туровцев В.И.Вентцель М.С.Прокорин	Основные закономерности включений в конвертерной рельсовой стали.
В.А.Уразов Ю.Т.Пушкинский-Дубинин	Включения в малоуглеродистой стали, содержащей титан.
Ю.Т.Пушкинский-Дубинин О.В.Дюмаев Е.В.Крутовцев	Включения в малоуглеродистой стали, содержащей кремний и алюминий.
А.И.Холодов	Основные данные раскисления и процесс электроплавки стали.
С.Г.Волков П.М.Долинов	Разработка и внедрение новой технологии выплавки мартеновской стали.
В.П.Морозов П.В.Дегтев	Влияние [illegible]

report submitted for the 5th Physical Chemical Conference on Steel Production, Moscow-- 30 Jan 1959.

A.I. Kholodov

24(8) PHASE I BOOK EXPLOITATION SOV/2117

Soveshchaniye po eksperimental'noy tekhnike i metodam vysokotemperaturnykh issledovaniy, 1956

Eksperimental'naya tekhnika i metody issledovaniy pri vysokikh temperaturakh; trudy soveshchaniya (Experimental Techniques and Methods of Investigation at High Temperatures; Transactions of the Conference on Experimental Techniques and Methods of Investigation at High Temperatures) Moscow, AN SSSR, 1959. 789 p. (Series: Akademiya nauk SSSR. Institut metallurgii. Komissiya po fiziko-khimicheskim osnovam proizvodstva stali) 2,200 copies printed.

Resp. Ed.: A.M. Samarin, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: A.L. Bankvitser.

PURPOSE: This book is intended for metallurgists and metallurgical engineers.

COVERAGE: This collection of scientific papers is divided into six parts: 1) thermodynamic activity and kinetics of high-temperature processes 2) constitution diagram studies 3) physical properties of liquid metals and slags 4) new analytical methods and production of pure metals 5) pyrometry, and 6) general questions. For more specific coverage, see Table of Contents.

Experimental Techniques and Methods (Cont.) SOV/2117

Ol'shanskiy, Ya.I. (Deceased). On Certain Phenomena in Substances With Mixed Electron-Ion Conductivity 402

Chernyshev, A.M. Viscosimetry of Metallurgical Slags 411
The author describes the principal types of viscosimeters for determining the viscosity of slags, i.e., those with rotating coaxial cylinders (in practice a rotating crucible and spindle), those with oscillating spindle, and the falling-drop type.

Musorin, G.V., and A.I. Kholodov. A Study of the Viscosity of Slags of the Reducing Period in Electric Melting 430
An experimental method was developed for studying the viscosity of slags of the reducing period of the electric melting of steel. It was shown that special crucibles have to be used for measuring the viscosity of white slags. A method was developed for measuring the viscosity of carbide slags in the electric melting of steel in graphite crucibles. The effect of the basicity of synthetic slags on their viscosity was demonstrated. Data were obtained showing the viscosity of slags withdrawn at various intervals during the reducing period. It was shown that the viscosity of these slags depends on their chemical composition and is determined by the percentile ratio of CaO to SiO_2-CaF_2.

Kholodov, A.I., and G.V. Musorin. Instrument for Measuring the Rate of Teeming of Steel 673

KHOLODOV, A.I., kand.tekhn.nauk, dots.

Calculating the interaction of steel and slag in the electric smelting process. Trudy Ural.politekh.inst. no.75:157-169 '59. (MIRA 13:4)
(Steel--Electrometallurgy) (Slag) (Ion exchange)

KHOLODOV, A.I., kand.tekhn.nauk, dots.

Investigating slag formation during the period of charge fusion in an electric arc steel smelting furnace. Trudy Ural. politekh.inst. no.75:170-180 '59. (MIRA 13:4)
(Steel--Electrometallurgy) (Slag)

KHOLODOV, A. I.

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PHASE I BOOK EXPLOITATION SOV/5411

Konferentsiya po fiziko-khimicheskim osnovam proizvodstva stali. 5th, Moscow, 1959.

Fiziko-khimicheskiye osnovy proizvodstva stali; trudy konferentsii (Physicochemical Bases of Steel Making; Transactions of the Fifth Conference on the Physicochemical Bases of Steelmaking) Moscow, Metallurgizdat, 1961. 512 p. Errata slip inserted. 3,700 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A. A. Baykova.

Responsible Ed.: A. M. Samarin, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: Ya. D. Rozentsveyg. Tech. Ed.: V. V. Mikhaylova.

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Physicochemical Bases of (Cont.) SOV/5411

PURPOSE: This collection of articles is intended for engineers and technicians of metallurgical and machine-building plants, senior students of schools of higher education, staff members of design bureaus and planning institutes, and scientific research workers.

COVERAGE: The collection contains reports presented at the fifth annual convention devoted to the review of the physicochemical bases of the steelmaking process. These reports deal with problems of the mechanism and kinetics of reactions taking place in the molten metal in steelmaking furnaces. The following are also discussed: problems involved in the production of alloyed steel, the structure of the ingot, the mechanism of solidification, and the converter steelmaking process. The articles contain conclusions drawn from the results of experimental studies, and are accompanied by references of which most are Soviet.

S/148/61/000/004/001/008
E071/E480

AUTHORS: Kholodov, A.I. and Ignat'yev, V.S.

TITLE: A study of the viscosity of electro steel smelting slags

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, no.4, 1961, 53-58

TEXT: The transfer of silicon and oxygen from metal to slag and vice versa during the smelting of steel in electric arc furnaces with acid lining depends on the reactivity of the acid slag which in turn depends on its chemical composition and viscosity. As there were no data available on viscosity, the authors determined the viscosity of acid slags obtained during the smelting of steel 35JI(35L). Samples of slag were taken at the end of the melt out period at a temperature of 1540°C, at the end of the oxidizing period at 1590°C and before tapping at 1620°C. The chemical composition of the slags varied within the following limits: SiO_2 37 - 58%, FeO 12 to 45%, MnO 11 to 20%, Al_2O_3 traces - 6%, Cr_2O_3 0.3 to 1.2%, CaO 0.8 to 11.6% and Mg 0.2 to 1.4%. In addition some synthetic slags (SiO_2 54 to 68%, CaO 10 to 30%, FeO 1 to 18%, MnO 1 to 18%) were tested. The viscosity was

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